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The JOURNAL of GEOGRAPHY

A Monthly Magazine Devoted to the Interests of Teachers of Geography in Elementary, Secondary, and Normal Schools.

RAY HUGHES WHITBECK, *Editor* LAWRENCE MARTIN, *Associate Editor*
Of the Department of Geology and Geography at the University of Wisconsin

VOLUME XIV DECEMBER, 1915 NUMBER 4

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Authors Are Personally Responsible for Opinions and Statements Expressed in The Journal

$1.00 a Year **THE JOURNAL OF GEOGRAPHY** 15c a Copy

V. C. FINCH, Business Manager

University of Wisconsin, Madison, Wis.

Entered at the Post Office, Madison, Wis., as Second Class Mail Matter Sept. 9, 1910

The Journal of Geography

Published Monthly Except July and August

Successor to the Journal of School Geography, Vol. V, and the Bulletin of the American Bureau of Geography, Vol. II.

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PRICE—The subscription price is one dollar a year, payable in advance. Fifteen cents a copy.

POSTAGE IS PREPAID by the publisher for all subscriptions in the United States, Hawaiian slands, Philippine Islands, Guam, Porto Rico, Tutuila and Samoa. Add 10 cents postage for Mexico and Canada. For all other countries in the Universal Postal Union add forty cents for postage.

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HOW TO REMIT—Remittance should be sent by Check, Draft, Express Order, or Money Order, payable to order of The Journal of Geography. It is, as a rule, safe to send a dollar bill without registering, but sender must assume the risk. Larger amounts should not be sent in cash.

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The JOURNAL of GEOGRAPHY

Volume XIV DECEMBER 1915 Number 4

THE CULTURAL AND THE TRAINING VALUE OF GEOGRAPHY*

By Bertha Henderson
University High School, University of Chicago

ACCORDING to the New Century Dictionary, the word "Culture" means refinement, purity in thought, love of the beautiful, wisdom, training and refining the moral and intellectual nature.

In our efforts to put geography on a scientific basis we frequently overlook its cultural possibilities. A great help toward bringing out this side of the subject is its relation to daily events, to the subjects which engage the attention in the best newspapers and periodicals. While we were studying Cotton in the commercial geography class an article appeared in the *Review of Reviews* dealing with the cotton situation brought about by the conditions in Europe. A number of my class came with information gained by reading the article. As a rule, adolescents are not attracted to that class of magazines nor to that type of articles. At another time we were opportunely studying the cattle industry when the epidemic of foot-and-mouth disease swept over the country. Some of our dignified seniors nearly tumbled over themselves coming into the geography room to tell of the reports in the newspapers. Perhaps if they had not been studying Commercial Geography, they would have at least read the headlines, but the point I am trying to make is that the interest is greatly augmented by the more intimate association with the subject in the class room.

Creates An Interest in Good Books

In the same way the study of geography directs the way toward a look into the world of books of travel and description. After a careful study of Panama and the Canal, books on that subject are more likely to attract the attention; and if we have given Russia her fair share of time in the study of regional geography, some of the newer, juster books describing that country have a better chance of being selected from the library shelves. Especially is this true if a taste of the book has been given in finding information for use in the class room.

Stimulates a Desire to Travel

Regional geography stimulates a desire for travel, while physiography and commercial geography make interested and intelligent travelers. I well remember my journey into the Bavarian Alps in company with a large party

*Read before the Conference of Affiliated Schools at the University in April, 1915.

of Americans, most of them teachers, and many of them claiming educational titles. Some of us had studied geography and we had not eyes enough to see, nor mind enough to interpret all the wonderful stories in craig and peak, mountain wall and plunging stream, that were spread out before us during an entire day's travel. With the rest of the party, about three quarters of an hour of this scenery (for it was nothing more to them) satisfied them and they spent the rest of the day playing cards, reading novels, and gossiping. Yet they were people who were cultured, they told me so themselves, and said they had come abroad to add to their culture by studying the beautiful things in the old world. For them beauty existed only on canvas in an art gallery, or in picturesque situations in a dirty, miserable part of a city. Much of the beauty in the world depends upon our ability to see it and to interpret it; a knowledge of physiography lends greatly to this ability.

Develops Social Interests

In a recent address, Rabbi Hirsch said, "Wisdom is knowledge hitched to humanity." Of all phases of geography perhaps commercial geography has the best hitching facilities. Through it we can easily arouse an interest in the social phase of commercial products. When the great importance of such commodities as wheat, iron, or coal is clearly understood it is not hard to stimulate the thought that the producers of this wealth are worthy of consideration; that the health, intelligence, and general comfort of the laborers are important factors in the equation of production; that conservation of exhaustible resources is a question of world wide importance.

Teaches the Library Habit

One of the most potent helps in cultural development through geography is the opportunity it gives for the use of the library in regular daily work. Our subject is not static, but is concerned with the changing, growing, oscillating conditions of our surroundings. In many cases a textbook is behind the times as soon as it comes from the press. To my mind the advantages of the use of reference books over the use of one textbook are manifold. In the first place it gives a broader view of the subject matter. Each author who writes a book has, or thinks he has some new material to add, some new point of view, or some new or different method of treatment. Surely the reading of a number of different authors on the same subject, culling the contribution of each, is more profitable than reading several times over the material of one author. It is a rule of psychology that the mind reaches out for information about things of which it knows something but not everything. At about the third reading of the same page the mind begins to wander into more enticing fields, the effort to hold it to the task becomes drudgery, and the pleasure in acquiring knowledge is replaced by a feeling of repugnance. On the other hand if each reading is a new treatment of the same subject, the presentation from another point of view, enough fresh

material is given to hold the attention and to whet the appetite for more. Getting the lesson under these conditions at least has the advantage of variety over monotony.

Gives an Acquaintance with Source Material

At the same time, as a side line, an acquaintance is acquired with the literature of the subject, and with the knowledge that work of this kind is important enough to have engaged the attention of writers, students, and publishers. The students make friends with a few of these books, know what they contain and where they are to be found. As they read they must learn to weigh and judge the worth of each author, must get beyond the notion that a statement is true because it is published. If there are contradictory or differing statements they may be stimulated to go to sources and find the truth for themselves, which is a long step toward scholarship. They may grow into a breadth of vision and tolerance that will at least admit that there is more than one side to a question, and that one writer may be just as honest, just as sincere, and just as wise, when he holds to a certain view of the matter in hand as the one who takes the other side.

Replaces Textbook Drudgery

Most textbooks are dry, prosy reading. In their very nature they are concerned with the clearest statements in the fewest possible words. Their mission is not to attract the reader but to teach him. One of our great educational philosophers said, "Man should be taught as if you taught him not." This principle can not be applied to the textbook. In high school geography we are not alone concerned with filling the mind with facts. Most of the facts we teach are soon forgotten and it is well that they are. In addition to the facts, we wish to throw a geographical atmosphere around the student, pleasant, agreeable, satisfying enough to make him want to keep it after school days are over. One of the helpful means to this end is the ability to read with pleasure, or for recreation, books or magazine articles of travel and description. Many of them are charmingly written, contain valuable information, and hold the interest. Seaching for knowledge in them is a pleasure and not drudgery. Hedge a deep, wide-reaching subject within the narrow confines of a textbook and you have reduced it to bare outlines devoid of enlivening relations, almost to a dead skeleton. Teach the same subject from as many books as possible, with field work, museum material, etc., and the very nature of a geographical topic will be vibrating with life, its radiating lines will run out into many allied subjects, and will awaken interests that lead to wider outlooks and richer lives.

Trains In the Use of Indexes and Bibliographies

Another great advantage is training in the use of the library and books. In order to find the material wanted the use of the index and table of contents must become a habit. After a few bibliographies have been given out

on an assigned topic, the students may be given the task of making their own bibliographies. I usually begin this by putting on the reserve shelf the books bearing on the subjcet, and then sending the class to list the books—with author, titles, pages, etc.,—that contain material. Usually I ask that the paragraphs, headings, and their pages be listed with the books. Not long ago I sent a class to the library to make a bibliography on *Coal* and one boy came back with a list of 25 books all nicely classified and divided into subheads. One or two assignments where the books are all gathered and put upon the reserve shelf is enough. After that only the standard books are kept on the shelf, and the students are sent to the card catalogue, Reader's Guide, and Pool's Index to supplement the reserve books. They are also encouraged to go to the college library, the Crerar, or any other available one for books on the same subject. After the first plunge this is great fun. The knowledge of how to use the library is one of the most valuable assets that may be given to the pupils of the high school. I have sometimes wondered if the great slaughter of the freshmen at the end of the first semester in college might not in a small way, be due to the fact that the freshman does not know how to use sources of information. He may be possessed of mental power enough to do the work, yet not know how to go about it. If he knows how to use the library and is accustomed to working in it and making it serve him, some time is surely saved for him.

Library Work Not Necessarily Desultory

The objection may come that some of the essential points of a subject are missed in the scattered study in the library. In this wider method of study each reader fixes upon the points that are essential to him, and surely he is the best judge. Under the wise direction of the teacher the attention will be directed to the essential things and each student will grasp that which appeals to him. We have no right to force our judgment upon the class to the exclusion of the individual bias of the students, and adolescents are very tempermental. The phase of a subject that will appeal to one may have but little interest for another. In one set of papers, 21 in number, handed to me on *Cotton* there were seven different treatments of the subject and each one was good. Yet the 21 had all studied the same books and attended the same recitations. Again, the cry is raised that the high schools have no libraries. When Kitchener was made war lord last year he went to the war office, and as he entered he said to the guard at the door, "Is there a sleeping cot in this building?" "I do not know, sir," said the guide. "Get one," said Kitchener, and passed on into the building. They put in the cot. When the teachers want libraries in the high schools and make their wants known in no uncertain manner the libraries will be put in just as the laboratories were.

Conclusion

To sum up: Through the study of geography we may direct the student to current periodicals and newspapers of a good class, we may stimulate

them to read books of travel and description, and arouse a desire to travel, and at the same time we may train them into library habits. We may lead them to respect labor, to appreciate beauty in nature, and to an ethical point of view in the social phase of the study of the great commercial products.

WHERE OUR PRINCIPAL MINERALS COME FROM

By F. E. Williams
University of Wisconsin, Madison

THE following statistics, given in round numbers only, are taken from Mineral Resources of the United States for 1913 (published by the U. S. Geological Survey). More detailed information and statistics of the less common minerals may be obtained by consulting the above publication. Unless otherwise stated the figures given are for the year 1913. Only the more important producers of the different minerals are listed.

Aluminum.—Aluminum may be obtained from several different minerals but most of the product of the United States is derived from bauxite which is a mineral resulting from the decay of a granite-like rock called syenite.

Production: U. S. 210,000 long tons valued at.....$997,000
France (in 1911) 251,000 long tons.

Gold.—Over 91 per cent of the gold was produced from silicious ores (gold-quartz and gold-silver quartzose ores) and placers (gravel beds). Most of the remainder came from the copper, lead, and zinc mines.

Production: United States	$ 89,000,000
California	20,240,000
Colorado	18,110,000
Alaska	15,200,000
Nevada	11,977,000
South Dakota	7,214,000
Africa (1912)—mostly South Africa	212,000,000
Australasia (1912)	55,000,000
Mexico (1912)	25,000,000
Russia and Finland (1912)	22,000,000

Silver.—Silver is produced largely from the same kind of ores as gold but less than 1 per cent is obtained from placers while a large per cent (between 55 and 60 per cent) is obtained from the ores of copper, lead, and zinc.

Production: United States	$ 40,350,000
Nevada	9,457,000
Montana	7,574,000
Utah	6,814,000
Idaho	5,724,000
Colorado	5,429,000

Mexico (1912)	47,600,000
Canada (1912)	19,425,000
Australasia (1912)	9,700,000
Germany (1912)	8,160,000
Peru (1912)	5,380,000

Iron.—Iron, for the most part, is obtained from some oxide of the metal and the reddish ore known as hematite furnishes a large portion of the product.

Production: United States, 62,000,000 long tons	$131,000,000
Minnesota, 38,600,000 long tons, 62.37% of U. S.	80,790,000
Michigan, 12,840,000 long tons, 20.72% of U. S.	33,480,000
Alabama, 5,200,000 long tons, 8.42% of U. S.	6,649,000
New York, 1,460,000 long tons, 2.36% of U. S.	3,100,000
Wisconsin, 1,020,000 long tons, 1.64% of U. S.	2,150,000

Districts—

Lake Superior, 52,377,000 long tons, 84.51% of U. S.
Birmingham, 4,602,000 long tons.
Adirondack, 1,215,000 long tons.
Chattanooga, 709,000 long tons.

Iron ore is often smelted at some distance from the mines as shown by the following figures for pig iron:

United States	31,000,000 long tons
Pennsylvania	12,900,000 long tons
Ohio	7,100,000 long tons
Illinois	2,930,000 long tons
New York	2,065,000 long tons
Alabama	2,057,000 long tons

Foreign Ore Production—

Germany and Luxemburg (1911)	30,000,000 long tons
France (1911)	16,300,000 long tons
United Kingdom (1911)	15,500,000 long tons
Spain (1911)	9,000,000 long tons

Copper.—Copper-bearing minerals are numerous and widely distributed but the number of important producing districts is comparatively small. The ores of copper are numerous but there are only a few that are important.

Production: United States	$189,795,000	1,224,500,000 lbs.
Arizona		404,279,000 lbs.
Montana		285,720,000 lbs.
Michigan		155,715,000 lbs.
Utah		148,057,000 lbs.
Nevada		85,210,000 lbs.
Japan		161,377,000 lbs.

Spain and Portugal	120,592,000 lbs.
Mexico (162,479,000 lbs. in 1912)	116,403,000 lbs.
Australia	104,278,000 lbs.
Chile	88,184,000 lbs.
Canada	76,976,000 lbs.
Russia	74,736,000 lbs.
Peru	56,658,000 lbs.
Germany	55,776,000 lbs.

Lead.—Lead and zinc are frequently associated in a great variety of ores and found under many different conditions as in veins, irregular masses in rocks, or in residual clays.

Production: United States, 32.4% of total	412,000 short tons
Missouri	176,000 short tons
Idaho	158,000 short tons
Utah	83,000 short tons
Colorado	44,000 short tons
Spain	224,000 short tons
Germany	200,000 short tons
Australia	128,000 short tons
Mexico	68,000 short tons
Belgium	56,000 short tons

Zinc—

Production: United States	418,000 short tons
Missouri	124,000 short tons
New Jersey	84,000 short tons
Colorado	59,000 short tons
Montana	44,000 short tons
Wisconsin	30,000 short tons
Germany	312,000 short tons
Belgium	217,000 short tons
France and Spain	78,000 short tons
Great Britain	65,000 short tons

Nickel.—The United States refines more nickel than any other country but practically all of it comes from Canada with a small amount from New Caledonia (a group of islands east of Australia). The Canadian production in 1913 was valued at over $7,000,000.

Platinum.—Very little platinum is produced in the United States. A small amount is obtained in California and Oregon. Platinum was (1913) worth about $45.00 per troy ounce in New York City.

Foreign Production—

Russia	250,000 troy oz. (over 93% of total)
Colombia	15,000 troy oz.

Tin.—Tin is one of the few metals which are relatively abundant in some localities of the world which are not abundant in the United States. The Straits Settlements produce by far the greatest quantity of tin nearly all of which comes from alluvial deposits. In 1913 shipments amounted to 56,142 short tons (worth 37 to 50c per lb. in New York City). Bolivia is a large producer, nearly all of which comes from lodes or veins.

Asbestos.—Asbestos is a fiber-like mineral mined mostly in ancient crystalline rocks. The province of Quebec, Canada, is the largest producer of raw material and the United States is the largest producer of manufactured asbestos products.

Production:

Canada (1912) .....136,000 short tons (about 85% of total)
Russia (1912) .....18,000 short tons
United States (1912) .....4,000 short tons (less in 1913)

Canadian asbestos ranged in price (1912 and 1913) from $10 to $350 per short ton depending on kind, length of fiber, and freedom from impurities.

Asphalt.—Natural asphalt is obtained largely from some kind of bitumen found in veins or lake-like bodies. Bituminous rock is also an important source.

Production—

United States, 93,000 short tons	$751,000
Utah, 31,000 short tons	529,000
California, 28,000 short tons	70,000
Kentucky, 17,000 short tons	60,000
Oklahoma, 16,000 short tons	91,000
Trinidad, 230,000 short tons	633,000
Venezuela, 84,000 short tons	400,000
France (1910) 187,000 short tons	277,000
Italy (1912) 182,000 short tons	581,000
Germany (1911) 90,000 short tons	155,000
Austria-Hungary (1910) 9,000 short tons	702,000
Spain (1910) 7,000 short tons	18,000

Manufactured or oil asphalt was produced in the United States (1913) to the amount of 437,000 short tons valued at $4,532,000.

Portland Cement.—Practically all of the cement produced in this country is Portland cement which is made by burning a finely ground mixture of lime, silica, alumina, and some iron oxide.

Production—

United States, 92,000,000 bbls. $93,000,000
Pennsylvania, 29,000,000 bbls.
Indiana, 11,000,000 bbls.
California, 6,000,000 bbls.

New York, 5,000,000 bbls.
Illinois, 5,000,000 bbls.
Missouri, 4,800,000 bbls.

Coal.—The two important varieties of coal are bituminous, or soft coal, and anthracite, or hard coal. Bituminous coal is found in many states but anthracite is restricted to but few localities. The United States produced 39.49% of the world's total.

Production—

United States (bituminous) 479,000,000 short tons.....$565,000,000
Pennsylvania, 174,000,000 short tons..... 193,000,000
West Virginia, 72,000,000 short tons..... 73,000,000
Illinois, 62,000,000 short tons..... 70,000,000
Ohio, 36,000,000 short tons..... 40,000,000
Kentucky, 20,000,000 short tons..... 21,000,000
Pennsylvania (anthracite) 92,000,000 short tons.... 195,000,000

Foreign Coal Production—

Great Britain, 322,000,000 short tons.
Germany (1912), 282,000,000 short tons.
Austria-Hungary (1912), 58,000,000 short tons.
France (1913), 45,000,000 short tons.
Russia (1912), 32,000,000 short tons.
Belgium (1912), 25,000,000 short tons.
Japan (1912), 22,000,000 short tons.

Petroleum.—The United States produced 65.12% of the world's product of petroleum.

Production—

United States, 248,000,000 bbls.....$237,000,000
California, 98,000,000 bbls.
Oklahoma, 64,000,000 bbls.
Illinois, 24,000,000 bbls.
Texas, 15,000,000 bbls.
Louisiana, 12,000,000 bbls.
Russia, 61,000,000 bbls.
Mexico, 26,000,000 bbls.
Roumania, 13,500,000 bbls.
Dutch East Indies, 12,000,00 bbls.
Galicia (N. E. Austria-Hungary), 7,800,000 bbls.

Natural Gas.—The United States is by far the greatest producer and user of natural gas.

Production—

United States, 581,900,000,000 cu. ft. (estimated).....$88,000,000
West Virginia 34,000,000

Pennsylvania 22,000,000
Ohio 10,000,000
Oklahoma 7,000,000
Kansas 3,000,000
Canada, 20,345,000,000 cu. ft. (estimated) 3,000,000
Hungary ..... Small amount
Italy (1912) 57,000
United Kingdom ..... Very small amount

Granite—

Production—

United States $21,000,000
Vermont 3,800,000
Massachusetts 2,100,000
Maine 1,800,000
New Hampshire 1,500,000
California 1,450,000

Graphite.—Graphite is found in either igneous, sedimentary or metamorphic rocks. The deposits of greatest commercial importance are veinlike which may traverse one or all of the above group of rocks. It is used in the manufacture of crucibles and other refractory products, for lubricating, for pencils, for graphite paint, and for coating molds in foundries.

Production of natural graphite—

United States (1913) 4,775 short tons $294,000
Austria (1911) 47,000 short tons 332,000
Ceylon (1911) 30,000 short tons 2,160,000
Italy (1911) 14,000 short tons 75,000
Germany (1911) 12,500 short tons 73,000

Practically all of the natural graphite produced in the United States was mined in Alabama, New York, and Pennsylvania.

Phosphate Rock.—Among the fertilizers used, phosphate of lime plays an important part. Southeastern United States mines most of this country's product.

Production—

United States, 3,100,000 long tons $11,800,000
Florida, 2,540,000 long tons.
Tennessee, 452,000 long tons.
South Carolina, 109,000 long tons.
Tunis (1911) 1,590,000 metric tons.
Algeria (1911) 739,000 metric tons.
France (1911) 312,000 metric tons.
Belgium (1911) 197,000 metric tons.

Salt.—Salt is produced in various ways for it occurs naturally in two distinct forms—(1) rock salt in beds, and (2) in natural brines or bitterns. Some of the salt is mined and some produced by evaporation of brine. The processes used at the present time are: (1) Solar evaporation; (2) direct heat evaporation in open kettles or open pans; (3) steam evaporation in jacketed kettles; (4) vacuum pan evaporation.

Production—

United States, 34,400,000 bbls.....$10,125,000
Michigan, 11,530,000 bbls.
New York, 10,780,000 bbls.
Ohio, 5,310,000 bbls.
Kansas, 2,700,000 bbls.
California, 1,082,000 bbls.

In Michigan and Kansas the salt is obtained both by mining rock salt and evaporating brines; in New York and Ohio largely by evaporation of brines from deep wells; in California by solar evaporation of sea water.

Sulphur.—The United States and Italy produce about the same amount of sulphur although in 1913 Italy marketed more than the United States. In Italy, which was until quite recently the most important source, the sulphur is mined. The same is true for Wyoming and others of our western states. In Louisiana and Texas, where most of the sulphur of this country is obtained, the solid material is melted underground by superheated water and the liquid is pumped or forced to the surface.

Production—

United States, 311,590 long tons (marketed).....$5,480,000

Louisiana, Texas, and Wyoming were the leading states, with the first named far in the lead.

Italy, 346,213 long tons (mined).

Four Hundred Million From The Comstock

The famous Comstock lode of Nevada is a great fissure vein, 4 miles long, along a line of faulting in the eruptive rocks of the Virginia Range. It crops out on the east side of Mount Davidson. The ore, which is of high grade, carries silver and gold in quartz. In the old days it occurred typically in great bodies called "bonanzas." The district was noted for the large scale on which everything connected with the mining, including the speculation, was carried on. The size of the old dumps and the kind of machinery employed show that great things were done here. About $400,000,000 in gold and silver, in the ratio, by value, of 2 of gold to 3 of silver, has been taken out of the Comstock. Considerable ore is still being mined, but the great bonanzas have all been worked out.

THE CARNEGIE INSTITUTION'S ATLAS OF THE HISTORICAL GEOGRAPHY OF THE UNITED STATES

By Charles O. Paullin

Department of Historical Research, Carnegie Institution of Washington

THE Department of Historical Research in the Carnegie Institution of Washington is preparing for publication an *Atlas of the Historical Geography of the United States,* which will be of interest to geographers as well as historians. Since the proposed work covers a field common to history and geography, specialists in each of these branches of knowledge are cooperating in its production. Several distinguished scholars have already given it the benefit of their services—among historians, Prof. Jesse S. Reeves of the University of Michigan; Prof. Max Farrand of Yale University; Prof. O. G. Libby of the University of North Dakota, and Prof. Frank H. Hodder of the University of Kansas; and among geographers, Prof. R. H. Whitbeck of the University of Wisconsin; Mr. James White, assistant chairman of the Canadian Conservation Commission; Mr. John E. McGrath of the U. S. Coast and Geodetic Survey, and Dr. Otto Tittman, formerly superintendent of that survey.

The completed Atlas, exclusive of text, will contain some two hundred pages (or double plates) measuring about twenty-eight by eighteen inches. A few of the maps will be approximately the size of the double plate, some one-half or one-fourth that size, and many of still smaller sizes. When possible the maps will be constructed in series, each covering a considerable period of time. This will permit the making of comparisons between the several maps of any one series, as well as between maps of different series, both of which comparisons those who use or interpret the maps will wish to make. With a few exceptions, such as the maps showing geological strata or the ancient ice sheet, the period of time covered by the Atlas is that beginning with the discovery of America in 1492 and ending with the date of publication, a few years hence. The area covered will be generally a whole or a part of the continental United States, but occasionally it will be necessary to represent our detached possessions, the adjacent parts of Canada and Mexico, and the North Atlantic and North Pacific oceans.

The kinds of information to be illustrated may be briefly described as such historical information as admits of cartographical treatment and such geographical information as is of primary interest to historical writers and teachers. A notion of the contents of the Atlas may be obtained from the following general headings of its several divisions, which have been proposed: physical geography, aborigines, early maps of America, routes of explorers and colonizers, boundaries and divisions, industrial and social maps, political maps, city maps, and military maps. Possibly of most interest to geographers will be the physical and the industrial and social maps. Of the former, the Atlas will contain maps illustrating the relief, soils, rainfall, climate, and

geology of the United States, and maps showing the ancient ice sheet and the currents and winds of the North Atlantic and North Pacific oceans. The following maps showing industries and resources are now in manuscript and are ready for publication; manufacturing centres, 1839, 1859, 1879, 1909; iron manufactures, 1857, 1879, 1909; cotton manufactures, 1810, 1839, 1879, 1914; distilleries and distilled spirits, 1809, 1909; natural forest regions; coal fields, 1913; petroleum fields, 1914; distribution and production of iron ore, 1913; copper, gold, and silver mining districts, 1912; railroads for each decade from 1840 to 1910, and the great consolidation of railroad systems; and maps showing abandoned canals and those still in use.

The political maps, which are to be constructed somewhat after the method followed by Prof. Frederick J. Turner of Harvard University, will correlate politics with geography, and will show the geographical distribution of political sentiment. For this division there have been completed thirty-two manuscript maps showing the distribution of votes (chiefly by counties) for the presidential elections from 1788 to 1912. There have also been completed a series of maps showing the distribution of votes in the lower house of Congress on thirty-one important national measures, beginning with the amendment for the Assumption of State Debts in 1790, and ending with the Underwood Tariff act of 1913. At the present time the preparation of a series of maps illustrating international boundary disputes is engaging the attention of the Department of Historical Research.

Aluminum the Most Abundant Metal

Aluminum is the most abundant of all the metals. In the form of its oxide, alumina, it constitutes about 15 per cent of the earth's crust, according to the United States Geological Survey. Yet until recent years it was a curiosity; there were only a few hundred or few thousand pounds in existence, and its value was $14 or $15 a pound. Within a generation it has become very useful, now selling at about 20 cents a pound. The entry of aluminum into the field of useful metals came with the discovery that it could be extracted from the mineral bauxite, a claylike substance. This mineral itself is by no means plentiful, but known deposits are sufficient to make aluminum an important competitor of certain metals, such as copper and tin, in a good many lines.

Already aluminum has displaced steel in certain classes of construction where strength is required in combination with extreme lightness, such as in the manufacture of flying machines. An alloy known as duralumin, containing about 95 per cent of aluminum, is claimed to have qualities as good as those of good Bessemer steel, although it is only one-third as heavy. This alloy possesses great hardness when annealed, and its melting point is above 1200 degrees F. The great future of aluminum lies in the perfection of a process whereby it can be commercially extracted from the unlimited deposits of alumina-rich clays and rocks.—[*Commercial America.*]

TYPES OF LABORATORY EXERCISES FOR HIGH SCHOOL GEOGRAPHY

By Cassa C. Benham*
Hillsville, Va.

THE exercises in the manual have been written after a careful review of the needs of Geography as given in various articles published in the Journal of Geography and other papers since 1890. It was found that the demands for humanizing Geography have steadily increased, and that laboratory work in Geography can be made as interesting and profitable as that of Physiography. So with these two purposes in mind, together with a desire to increase interest in reading maps, and to create a deeper sympathy with man, these exercises have been written.

The manual includes twenty-one exercises most of which contain enough material for two or more laboratory periods. The whole course is intended to cover a year's work in High School Geography, but it is not expected that any class can accomplish all the work proposed. Choice is left to the teacher's discretion. If the course is limited to a half year, only a part of each exercise should be used. Other exercises might have been prepared but the choice was given to subjects whose illustration by maps or other means would require a medium expense.

A large number of maps have been suggested in the exercises. To procure all of these would make the cost high for the average laboratory. Many maps may be used in two or more exercises, for example, Rand and McNally's map of the United States may be used in ten of the exercises. If it is expected to clip the exercises, of course only the maps that will be used need be purchased.

The laboratory equipment is for the ideal laboratory. The teacher with ingenuity might sometimes substitute maps already in the laboratory or those in reliable text books.

Exercise 1.

Material—

1. Columbus, Ohio. Columbus Quadrangle, U. S. G. S.
2. Cleveland, Ohio. Euclid, Berea, and Cleveland Quadrangles, or the Cleveland Special U. S. G. S., or Cleveland Harbor, Lake Survey, or both.
3. Denver, Col. Denver Quadrangle, U. S. G. S.
4. Pittsburg, Pa. New Kensington, Pittsburgh, Carnegie, Sewickley Quadrangles, U. S. G. S.
5. San Francisco, Cal. San Francisco, Coast and Geodetic Survey, No. 5530, (1911) or San Francisco and vicinity, U. S. G. S., or both.

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*The work involved in preparing these studies was done as a part of the requirement in a course in The Teaching of Secondary School Geography, given at Oberlin College by Professor George D. Hubbard. The author's thanks are hereby expressed to him for suggestions and criticism in the course. The preface and three exercises are here selected; and a list of all exercises in the guide is added.

6. Omaha, Neb. Omaha and vicinity Quadrangle, U. S. G. S.

7. Chicago, Ill. Lake Survey Chart, Chicago Harbor, or U. S. G. S. Quadrangles, Calumet, Des Plaines, Riverside and Chicago or both.

8. Seattle, Wash. Seattle or Snohomish Sheets U. S. G. S. United States Coast and Geodetic Survey Chart, No. 6400—Seacoast and Interior Waters of Wash. (50c).

9. Birmingham, Ala. U. S. G. S. Birmingham, Bessemer Special, Leeds, Vandiver Quadrangles.

10. Minneapolis, Minn. St. Paul and Minneapolis, Quadrangles U. S. G. S.

A City—

(Suggestion: Choose the nearest or best known first, then use one other). 1. Observe the main streets of the city with respect to their length and direction. Where is the business section located? Where are the mills and factories located with reference to each other? to the business section? to the residence district? to the streams? to the railroads? Why are things so arranged? Observe the size of the water body or river upon which the city is located. Why is this special place an advantageous location? Of what use is the river to the city? Notice the culture along the streams, i. e., wharves, parks, bridges, etc. Why are they present? Determine the number of railroads. Can you state any reasons why this is their meeting place? Follow them singly out of the city. Where do they go? From whence do they come? Why do they take such routes with reference to direction? to rivers? to mountains? to plains? to lakes, etc.? Observe the number of side-tracks. What is their relation to certain factories? To transportation needs?

2. Contrast and compare other cities. Why are there such striking similarities or such dissimilarities?

Exercise VII. Canals.

Material—

Picture of Panama Canal published by the National Geographic Society, Washington, D. C. Map showing the canal route. Map showing steamship routes. Recent population map of U. S., of Americas, or of world. Map of Suez—Mediterranean Eastern end, large scale, British Admiralty, London. Maps of the Welland Canal—Canadian Geological Survey. Irrigation Canals: for Truckee-Carson, Nev., use Truckee and Sierraville, Cal., Wabuska, and Wadsworth, Carson and Reno, Nev., sheets, U. S. G. S.

For Feather River, California region use Marysville, Smartsville, Bidwell Bar and Chico sheets U. S. G. S.

For the Okanogan region in northern Washington: Chopaka, Osoyoos, and Okanogan sheets U. S. G. S.

For Roosevelt Dam, Salt River, Arizona, use Roosevelt sheet, Arizona U. S. G. S.

For Caldwell-Middletown region in western Idaho use the Nampa and Boise sheets U. S. G. S.

1. *Canals for Transportation.*

Why is the Panama Canal necessary? What towns upon it? To what are they related? How has the canal probably affected their progress? How may it affect the commerce of the U. S.? Of all the world? What physical features have contributed to the location and kind of canal here? How does the climate affect the density of population in the canal zone? Is it possible that great industries will spring up in this zone? Why? Compare the Suez, the Welland, and the Kiel Canals as to their possibilities for power, and transportation.

2. *Canals for Irrigation.*

In a specific irrigated district notice the density of population as compared with that of a plain. What is the reason for this? What conditions might make dams and canals possible? What condition is here? How may power be obtained? Compare the Roosevelt dam project with that of the Feather River region of California. Show how they affect agriculture and horticulture? What two reasons make irrigation canals necessary here? What conditions make them possible? What might make an increase in the number of these projects in this region? How may they be developed?

Exercise XVII. An Agricultural Region.

Material—

A physical map as a basis for a small agricultural area. A group map of the states of Ohio, Indiana, Illinois, Iowa, Minnesota, and Wisconsin in a text book.

A Soil Types map from the U. S. Bureau of Soils, Washington, D. C.

As a type use any of the Prairie States.

From general knowledge what kind of a place physically—plain, plateau, mountain, etc.—is best adapted to agriculture? Of which character is the type state? How is it located with reference to mountains? What effects may mountains have on the agriculture of a region? What factors contribute in making a region good for agriculture? How is the prairie region drained? Into what do the streams empty? On a political map notice the cities and railroads. How many cities? How are they located with reference to one another? to rivers? to lakes? to railroads? to mountains? Why? What is their direct relation to the region as a whole? As commercial centers for exchange how are they related to cities of other regions? In what way are the cities of the agricultural region independent? How are they dependent upon the mountains? Upon the seacoast towns? Upon the ocean? How are agriculture and the climate related? Where rainfall is insufficient how does man attempt to meet the need? How are roads an adjustment in an agricultural region? What kinds are there? What plans do roads have? Are they a necessity to man? Why? From a crop map name the products of this region? Which are indirectly the result of agriculture? From a soil map learn the soil types suitable for agriculture.

2. Compare the Prairie States with the High Plains for agricultural advantages. With the Llano Estacado. Give reasons for similarities and differences.

LIST OF EXERCISES IN THE MANUAL

1. A city
2. A river as related to cities and industry
3. Man's use of a plain
4. Human adjustment to mountains
5. The culture of a plateau
6. Railroads
7. Canals
8. Economic importance of lakes
9. Coasts and harbors
10. Man and the ocean
11. Island peoples
12. Deltas and delta cities
13. Life in the desert
14. Glaciers as related to human occupations
15. Man's responses to temperature conditions
16. Rainfall and relief
17. An agricultural region
18. An industrial region
19. Forest and grazing
20. Scenic centers
21. Life and density of population

TEXTS FOR HOME GEOGRAPHY

DR. Charles A. McMurry, in his latest book, on *Conflicting Principles of Teaching,* emphasizes the need that teachers work out in detail the application of general pedagogical principles to the many topics and problems of geography and other studies. For the individual teacher the task is an interesting and fundamentally profitable one, though somewhat disheartening—it seems so endless. Just here the school printing press may be of great service, for the outlines and questions printed at one school may be interchanged with those prepared for class use elsewhere, when duplicated clearly and without cost. The Journal of Geography will gladly list those ready to exchange such detailed plans of class treatment of important topics, whether printed or duplicated in other ways.

In every community the topic most needing such full and thoughtful study of detail, with a view to their best presentation and development in class, is home geography. When the results of such studies, by the class of teachers who subscribe to this Journal, are put in printed form they will inspire to good work more teachers than those in the special towns and cities studied.

The Lynn Chamber of Commerce appreciates that it is best to base the future development of the city on a knowledge of its resources and history. The Chamber is arranging to have teachers and other citizens prepare brief texts on different phases of the history, geography, literature, and other life interests of the city; these to be printed by the school printing departments for use in all classes. This will be done practically without cost to either Chamber or City, for it represents the result of cooperation by many for the common good. The like may be done anywhere, and by exchange all may profit; and every new edition of a local text in each community will then represent a definite advance based upon experience in many places.

In geography there should be a text to accompany the first study of a town in the fourth grade. This may well be in the form of separate leaves. One will aid a teacher in making purposeful the enthusiasm for a first field trip to some hill or tower overlooking the town. By questions the leaflet will guide the children as to what to see and will set them thinking of the simple causes and relations. Another text leaf will follow the field lesson. This may be a reading lesson. It will name, perhaps define, the various land and water forms seen. This should tell enough of early pioneer life to make clear how plains, valleys and hills, streams, falls, and the like, affected the settlement, occupations, and movement of the settlers. This will lead to a statement of the broad effects of the town's physiography on the distribution of homes, industries, trade centers, and roadways today. Of course this text will follow good teaching and class discussion, and not precede them; though that would be far better than present omission of all such considerations in most communities. Similar pairs of leaflets will consider in more detail separate features of local geography—valleys, plains, lakes, life centers, industries, roads, etc.

A text for a higher grade, the eighth, should traverse the same ground in a more thorough fashion. It will then be timely to consider in some fulness the physiographic history of local land forms, so making clear their past influence on human life and their potential values for future development. This will serve also as a sound basis for general physiographic study by those who pursue the subject in the high school. In this grade also the development of local industries should be somewhat thoroughly studied,—the nature and processes of the industry from raw materials to finished products, more especially as these make clear geographical relations; also the history of its development in the community and the local and general geographical relations. These local studies will illuminate all world studies of industry. With each, an earlier leaflet will direct investigation, thought, and discussion; while later pages will put facts, relations, and conclusions in form for effective review. All other texts, presenting local legends and biography, pioneer life and its changes, relations of local history to that of colonial times and the national period, will serve to make the local geography of more interest and value if handled aright.

PHILIP EMERSON.

RIVERS

In their Influence upon Man and his Activities.

By W. R. McConnell
Normal School, Platteville, Wisconsin

1. Rivers are natural extensions of the sea into the land and are important agencies of transportation.

The price of transporting goods by water still averages less than one half the cost of any form of land transportation.

Ocean vessels go up the Amazon 2300 miles into the interior of Brazil.

The rivers of Russia are its chief highways of transportation. This country has 50,000 miles of navigated streams, but only 46,000 miles of railroads.

With only 6,000 miles of railroad, China's 400,000,000 people depend largely upon rivers and canal connections for the transportation of freight and people.

2. The surface of the land drained by a river system is modified by stream erosion into a series of valleys, slopes, and ridges, and may be ultimately reduced nearly to base-level as a result of such action. The distribution of the population and the human activities of a region are greatly influenced by the topography of the land.

3. Valleys formed by rivers during the process of wearing away the land exert a notable influence upon the activities of man.

The valleys of streams rising in highland areas in time become lowlands, extending back into the highlands, and are utilized for the construction of roads, railroads, and for agricultural purposes.

A sinking coast drowns the river mouths, and the bays that result from this form the world's best natural harbors. New York, San Francisco, London, Hamburg, and Bremen are examples.

If the valley has the form of a canyon or gorge the resulting natural scenery may add much to the pleasure of life.

4. Rivers, in degrading the land, carry away much material that makes for fertility of the soil.

The Mississippi carries daily into the Gulf of Mexico more than 1,000,000 tons of rich material; and it is removing material more slowly than other important rivers of the world.

The annual loss to the United States from the removal of soils by stream action is millions of dollars.

It is estimated that more than 3,000,000 acres of land in eastern United States has been ruined by erosion.

5. Rivers, particularly in their lower courses, often deposit a sediment over the lowlands bordering them, and in this way make alluvial plains of great fertility which are capable of supporting dense populations.

The Egypt of history is a narrow strip of land bordering the Nile River.

The density of population of the Ganges Valley in India is 389 per square mile, while the average for all India is 167 per square mile.

The flood plains of the rivers in southeastern China are the most densely settled large areas in the world.

Forty per cent of the people of Italy live in the Po valley.

In New England, the river valleys have had a steady increase in population and in the value of the land during the last half century, while the population of the uplands has had no notable increase and in many sections land values have declined.

6. In building deltas at their mouths, rivers have made much new and fertile land, as in the case of the Nile.

The delta of the Ganges and Bramaputra is about the size of the state of Illinois, and supports 500 people per square mile.

The "Imperial Valley" of California, so famous for fruit, is a delta built up by the Colorado River at the head of the Gulf of California.

7. Many river waters contain fish which form an important source of food supply. The salmon industry is centered around the Pacific rivers of northwestern North America.

8. Rivers with rapids and falls are an important source of power.

Manufacturing in New England grew up at water power sites.

The falls where the Atlantic rivers leave the Piedmont plateau have been an important factor in locating the so-called "Fall Line" cities.

Maine does two-thirds of its manufacturing by water power.

Switzerland does much of its manufacturing by water power supplied by swift mountain streams.

9. In arid and semi-arid regions rivers furnish water for irrigation. The people of some river valleys, as the Nile and Indus, depend upon the waters of the rivers for their entire water supply. 45,000,000 acres of land in our arid west are thought to be irrigable by the water from streams that have their sources in the mountains.

Great Prehistoric Lake

Lake Agassiz was a body of fresh water that existed during a late stage of the glacial epoch in the valley of the Red River of the North and extended northward from the present head of that stream for nearly 700 miles. Its area at the time of its greatest expansion was about 110,000 square miles, exceeding the present aggregate area of the five great lakes tributary to the St. Lawrence.

The shore of this ancient lake is marked by well-defined beaches, and it is from these that the existence and the extent of the lake are known. The lake was named by the geologist Warren Upham in honor of Louis Agassiz, who was the first to make a systematic study of glaciers and glacial phenomena.

EDITORIAL*

WE ought to stop at intervals for stock-taking. We need to simplify our professional stock-in-trade; to eliminate the superfluous things that over-burden and distract our minds, and over-load our time. Simplification first, then concentration—that should be our aim. We drive ahead, constantly taking on new responsibilities. Our lives become more and more entangled with increasingly numerous duties. All of these must be attended to sometime. Most of them need attention all the time. Thus we live in our characteristic American whirl, too often doing each thing hurriedly and unsatisfactorily; wearing ourselves out by trying to do too many things at once.

Most of us will probably agree that we have what President Wilson has so well called a "single-track mind." Very few of us can manage the intellectual traffic on a four-track mind. We need to reduce the number of our trains; to change their schedule, so that they shall not be running so dangerously close together; to put our small individual stocks of fuel onto fewer locomotives, so that these few may make better time, and do more satisfactory work.

How can this simplification of our tangled and disappointingly inefficient professional lives be accomplished? There is no single simple formula which can be suggested in reply to this question. Each of us has his own problems, and must reach his own solution of them. The important thing is to take time; to sit down quietly and think; to spread out our whole stock of professional responsibilities and interests, and to eliminate those which we honestly feel are, or seem likely to be, the least worth while, whether for ourselves or for others. For some of us it may be a course of instruction which we have been called upon to give, and which we have insufficient time ever to prepare satisfactorily, perhaps because our vital interest lies along other lines. That instruction should be abandoned, or entrusted to some one else. Others of us may find ourselves swamped under the rising tide of geographical literature—a tide which never ebbs. We try to look it all over; to read most of it. The inevitable result is nervous mental indigestion. What is the remedy? Obviously to reduce our reading to a carefully selected few of the most important publications; to limit ourselves to subjects which are of the most immediate concern and interest to us, relying upon our published bibliographies to keep us informed concerning all other publications. Many of us are scattering our energies, and thereby decreasing our efficiency, by trying to prepare for publication too many things at once. Taking account of stock should result in our abandoning some of these undertakings—those least worth while—and in our making serious and fixed resolution to reduce all such "outside" activities to reasonable limits.

Simplify—then concentrate. We teachers, perhaps more than any other group of workers in our complex modern civilization, need to follow that rule.

ROBERT DE C. WARD

*We hope to be able to give our readers from time to time short editorials written by members of our contributing staff.—*Editor.*

IRRIGATION FROM A GOVERNMENT CANAL

A lesson for the 5A Class in Geography

WE have discovered from our study of the winds and rain that winds from the Pacific Ocean drop their moisture west of the Rocky Mountains and so have little left when they reach the east side. As a result there is very little rainfall in this region.

If there is little rainfall what effect will it have on the soil, the usefulness of this part of the country and its settlement? The soil might contain plenty of mineral elements but because of the lack of rain it has become very sandy and very little grows there except buffalo grass and sage brush. In some places there are vast regions where nothing grows. Great hills of clay are to be seen and the land is a barren waste.

Men found that the buffalo grass was very nutritious as food for cattle. Then they began to have great herds of cattle and some flocks of sheep. Because of the lack of rain the grass did not grow rapidly and so it took a great deal of land to furnish enough pasturage for even a small herd. The United States government gave free pasturage to all the people. Each man branded his own cattle and they roamed at will all over the vast tracts of land. Each fall there would be a round-up when the cattle from the range would be gathered into the corral and separated according to the brands and the calves branded. Some of the cattle were shipped and the rest turned loose again to roam over the western plains.

Few people were needed to herd the cattle and for miles and miles not a house was to be seen, except occasionally a small log house of the cattle rancher.

Later it was discovered that gold, silver and other metals could be mined in layers of rock beneath the surface of this western land. The people from the East hurried west, staking claims. Mining towns grew up sometimes in less than a week's time. Many of the people were disappointed. These turned their attention to farming along the streams.

Still vast acres of land were left unused as the years went by. As the East became more thickly populated people began moving west. Experts examined the western soil and found it very good for farm land. There was plenty of warm sunshine and rich soil if only they had rain to make the crops grow.

In Egypt there is very little rainfall and yet it is one of the oldest agricultural regions of the world. How are these people able to raise crops? Each year the Nile River overflows its banks spreading a rich silt over the land and thoroughly soaking the soil. They are able to raise cotton, corn, rice, wheat and many other things.

There are many large rivers which flow across the western plains but they seldom overflow their banks and then only for a short distance. In the spring these rivers are very large because they are fed with the snow

from the mountains and the spring rains. The rivers quickly carry all this water to the Mississippi River and then to the Gulf of Mexico and the Atlantic Ocean.

If this water could be saved and used to water the fields it would do much toward irrigating the dry western plains. How could this be accomplished? By building a dam and letting the water out only as needed.

President Roosevelt thought this could be done and secured from Congress an appropriation of two million dollars to build a government canal. Previous to this time there had been some irrigating done by canals built by individuals or by private companies.

Far back in the mountains at the source of the Platte River in Wyoming, a dam called Pathfinder, 196 feet high, 450 feet long and 90 feet wide at the base was built. This is a solid wall of granite with an opening at the base 14 feet square. An iron door which is worked by machinery can close this opening and not let any water through. This door is closed every Saturday to see that it is in good working condition. In August, 1914, after the water had been used for irrigating all spring and summer the Pathfinder Lake was one hundred eighty-five feet deep and seventy-five miles around and water was backed up for twenty-one miles. From this hole at the base of the dam twenty-three thousand acres are irrigated at one time. If there is no rain for seven years there is plenty of water stored in Pathfinder Lake to water the land.

From the Platte River, canals are built to carry the water. In these canals cement headgates are built to regulate the flow of water. The headgates are divided into different parts each having a separate iron door which slides up and down. The headgate at Whalen has nine separate openings. From the canals, laterals are dug to the different farms and from these irrigation ditches are dug to the fields. To irrigate, they dam the ditch with a wooden headgate or with earth. The water then overflows, watering five acres at one time. Each farmer pays one dollar and a quarter each year for the water right on his land. Land which was formerly barren now raises corn, wheat, alfalfa, sugar beets, vegetables of all kinds, berries and many kinds of fruit. The same land which twenty to fifteen years ago was not worth more than one to five dollars an acre now sells for fifty, one hundred and some even two hundred dollars an acre. Their crops are more certain than in Iowa and Illinois because we are dependent on the natural rainfall. Some years when there is too much rain here the farmers of the West simply do less irrigating and when the rainfall is slight they irrigate more.

FLORENCE M. SMITH,
DeKalb, Ill.

THE DETERMINATION OF MINIMUM ESSENTIALS IN ELEMENTARY GEOGRAPHY*

AT a meeting of the Committee on Economy of Time held in the fall of 1912 it was suggested that current literature could be profitably employed as a standard for determining the kind of geographical information that the school should provide. The proposal was to read current newspapers and magazines, record the geographical references, and determine from the frequency of these references the relative value of the various types of geographical information. Results of the application of the method presented at the meeting seemed to indicate that the content of geography as now taught in the elementary school would be greatly modified if materials were chosen upon this basis.

The writer set this problem as one of the topics in his graduate seminary in educational values during the spring of 1913. A large number of newspapers and magazines were read by members of the seminary, the geographical and historical references were recorded and classified, and an attempt was made to evaluate the general procedure as a means of determining minimum essentials in these two subjects.

Typical results of the initial tests.—From the reports of the members of the seminary who aided the writer in testing this method, the following tables of frequencies have been selected:

One member collected and classified the geographical and historical references and allusions in eighteen issues of the *Outlook* and the *Literary Digest,* representing a period of seven years ending with 1913. She found in these eighteen journals a total of 2,237 geographical references. The distribution was as follows:

	Per Cent
References to facts of location, size, direction, etc., which may be assumed to require for their understanding a knowledge of "place and location" geography	53.5
References to political divisions and facts of government which may be assumed to require a knowledge of "political" geography	25.1
References to industries, commerce, products, etc., which may be assumed to require a knowledge of "commercial" geography	5.8
References to people, customs, religion, education, etc., which may be assumed to require a knowledge of "social" geography	4.8
References to places as scenes of historical events, which may be assumed to require a knowledge of "historical" geography	1.7
Other references primarily of local or transitory interest	8.9

A grouping of this sort is obviously subject to the errors or peculiarities of individual judgment, but it may be said that the classification just presented is quite consistent with those furnished by other readers.

*Excerpts from a report by Professor W. C. Bagley, University of Illinois, in the Fourteenth Yearbook of the National Society for the study of Education.

Another suggestive grouping is based upon the frequency of references to the various continents. If one is to read intelligently the journals which formed the basis of this test, one will find occasion to apply one's knowledge of the continents in approximately the following proportions (the maximum frequency of reference being represented arbitrarily by 100):

North America	100	Africa	4
Europe	73	South America	3
Asia	13	Australia	1

The principal European countries had an importance for the readers of the journals in question in the following proportions (giving England, as the country most frequently referred to, the arbitrary value of 100):

England	100	Italy	32
France	80	Turkey	30
Germany	70	Austria-Hungary	24
Russia	35	Spain	22

The countries and colonies of Asia show the following proportions of references as compared with England: China, 55; Japan, 50; India, 19; Korea and Persia (typical of the less important divisions), 4 each.

This order of frequency in references to European and Asiatic countries is fairly constant in the two reports which furnish comparable data.

The frequency of reference to cities is perhaps not so significant, although here, too, there is a goodly measure of similarity among the different reports. A combined rating, which may mean much or little, is given herewith:

FOREIGN CITIES (NEW YORK, 100)

London	31	Constantinople	12
Paris	26	St. Petersburg	7
Berlin	15	Vienna	7
Rome	12		

AMERICAN CITIES

New York City	100	Chicago	26
Washington	27	Philadelphia	20
Boston	27		

There is, in general, a direct although not a perfect correlation between the number of references to cities and the size of the cities—except, of course, that capitals of countries have an importance not always represented by their size.

Compared with references to countries and cities, the references to physical and physiographical features are not numerous. For readers of the journals used in the investigation, information about the following rivers seems

to be of the greatest importance and approximately in the order named for the first five: Mississippi, Hudson, Ohio, Missouri, Rhine, Nile, Danube, St. Lawrence, Potomac, La Plata, Seine, Niagara, Rio Grande, Columbia, Amazon, Congo. References to seas and gulfs follow in the following order: Mediterranean, Aegean, Mexico, Black, Adriatic, Marmora, Red, and Caspian. The straits most frequently mentioned are the Dardanelles, Bosporus, Magellan, and Bering.

CURRENT GEOGRAPHICAL NOTES

Uncle Sam's Landed Estate

Few Americans realize that the United States Government owns more than half of the land in the eleven states of the West. Here is the list:

State:	Total acreage owned by United States	Percentage of total owned by United States
Arizona	67,097,293	92.00
California	53,276,547	52.58
Colorado	37,702,033	56.67
Idaho	45,218,919	83.80
Montana	61,049,263	65.80
Nevada	62,219,423	87.82
New Mexico	49,315,409	62.83
Oregon	32,229,745	51.90
Utah	43,564,645	80.18
Washington	17,684,198	40.00
Wyoming	42,613,499	68.00

U. S. Geological Survey Maps Now Obtainable From Postmasters

The finest and most accurate maps of the United States are those made by the United States Geological Survey. This branch of the Government service prints more than 3,000 maps a day, or about a million a year, most of which are sold to the public directly from Washington. Book and stationery concerns in the larger cities of course handle these maps, but heretofore there has been no way in which the inhabitants of the small towns throughout the country could get them except by sending to Washington. Now, however, postmasters in towns and villages have the permission of the Post Office Department to handle these maps. When the Geological Survey prints a new map it sends a sample copy to the postmasters in the area covered, with the suggestion that they tack it up in a conspicuous place, where everyone calling for mail can see it. Only postmasters in regions that have been recently mapped have been asked to handle the maps, but the Geological Survey answers inquiries made by other postmasters, sending them a sample copy of the map that covers their district, if it has been mapped.

Heavier Buying by Neutrals

A year ago, when, as a result of the disarrangement of shipping and credits, exports from the United States to neutral countries began to fall off, there was much uncertainty as to the future of this trade. After the outbreak of hostilities a wave of optimism swept the country, an immediate and large increase in shipments to countries whose European sources of supply had been cut off or interfered with was looked for. This did not materialize, and there at once followed an equally strong wave of pessimism.

Throughout this period of doubt, with the pendulum swinging from one extreme to the other, there was a gradual growth in the opinion that sooner or later conditions in Europe would result in larger shipments from the United States to neutral countries. That is just what is happening at the present time.

The export returns of the United States for recent months prove conclusively that the neutral countries of the world are beginning to turn to the United States for the supplies of which they are in need, and which cannot be obtained in usual quantities—in some lines not at all—from the usual European sources. This larger buying in the United States by neutral countries was first indicated in the returns for the month of May, it became quite pronounced in June and continues until the present time.

A few figures taken from the official export returns of the United States for the month of June are interesting as indicating the extent of this trade expansion. Exports to South America in that month amounted to 13¾ million dollars and were over 80 per cent in excess of the exports in the same month a year earlier. Argentina and Brazil in particular bought more heavily; exports to the former more than doubled and to the latter almost doubled. Purchases by Colombia, Ecuador, Uruguay and Venezuela, of much smaller proportions, were in each case approximately twice as large.

Though South American countries lead the way in the buying of supplies from the United States, there has been an expansion in the exports to all neutral parts of the world. Exports to Asia in June showed approximately the same total and the same increase as those to South America. There was an increase of 25 per cent in the exports to Oceania and the West Indies and of 33 per cent in those to Africa.

As stocks become more depleted and as the demand in different lines becomes more pressing this expansion in the exports from the United States to other neutral countries of the world should gather impetus with each passing month.—[*Commercial America.*]

Argentine Meat Trade

In an article in the New York Journal of Commerce, A. D. Melvin, Chief of the Bureau of Animal Industry, and George M. Rommel, Chief of the Animal Husbandry Division, Bureau of Animal Industry, say:

"The growth of the meat trade in the Argentine Republic has been little short of remarkable, and its importance in the world's commerce is greatest in beef products. Although the exports of mutton from Argentine rose from less than 200,000 carcasses in 1884 to over 2,000,000 in 1895, they have grown rather slowly since that year, exceeding 3,000,000 in 1902 and reaching the high point of 3,679,587 carcasses in 1904. In 1913 fewer carcasses of frozen mutton were exported than in any year since 1896.

"The area of the Argentine Republic is in round numbers 1,138,000 square miles. On this area there are 29,000,000 cattle, 80,000,000 sheep and 3,000,000 hogs. Argentina ranks next to Australia in number of sheep, but is fourth in number of cattle, European Russia, the United States and British India far outnumbering her in this respect. In the hog industry she is a negligible factor.

"On this area of over one and one-eighth million square miles there are twenty-five cattle per square mile, very few of which are used for dairy purposes, and an average of seventy sheep per square mile, nearly all of which are used for wool production. The United States, on the other hand, has on its continental area of almost 3,000,000 square miles an average of only nineteen cattle per square mile. As against Argentina's seventy sheep per square mile we have seventeen, but the mutton qualities are more strongly developed in our sheep than in those of Argentina."

The Earth Has Had Many "Ice Ages"

It is not strictly correct to speak of the "ice age" or the "glacial epoch," for there have been many of them. It is now known that even this latest or Pleistocene glacial epoch has several important divisions, and in the Rocky Mountain region it appears that important changes in the form and height of the mountains, due to a wearing down by erosion, took place between the glacial subepochs.

More than 50 years ago it was recognized by English geologists that certain masses of gravel and breccia and certain planed and grooved rock surfaces in rocks of Permian age in India indicated a glacial epoch vastly older than that of the Canadian ice sheets, but it is only within the last 30 years that geologists have learned that glacial conditions have recurred at many different times in the earth's history. The evidence of this has been found in all continents, in Europe, Asia, Africa, Australia, South and North America. The formation of great ice sheets took place at different periods in the larger divisions of geologic time back to the Proterozoic—that is, to the age of the oldest known sedimentary rocks, a great many million years ago.

One of the most recent discoveries of old glacial deposits is that made by Prof. W. W. Atwood, of the United States Geological Survey in southwestern Colorado. Prof. Atwood's report of this discovery has just been issued by the United States Geological Survey as part B of Professional Paper 95. Copies of the report may be had on application to the Director of the United States Geological Survey, Washington, D. C.

Comparative Wealth of Nations

Estimated wealth of different countries.—Owing to the insufficiency of official and trustworthy data pertaining to the subject, it has been impossible to prepare a summary of the aggregate wealth of all nations. The following statement summarizes the information concerning the wealth of the principal nations as it has been assembled by Augustus D. Webb, Fellow of the Royal Statistical Society, and published in "The New Dictionary of Statistics" for 1911.

United States (last census estimate) year 1912, total wealth	$187,739,000,000
British Empire, year 1903, total wealth	$108,279,625,000
United Kingdom, year 1903, total wealth	$ 72,997,500,000
Canada, year 1903, total wealth	$ 6,569,775,000
Australasia, year 1903, total wealth	$ 5,353,150,000
India, year 1903, total wealth	$ 14,599,500,000
South Africa, year 1903, total wealth	$ 2,919,900,000
Remainder of Empire, year 1903, total wealth	$ 5,839,800,000
France, private wealth	$ 46,798,500,000
Denmark, year 1900, total wealth	$ 1,946,600,000
Germany, year 1908, total wealth	$ 77,864,000,000
Australia, year 1903, private wealth	$ 4,578,903,000
Cape of Good Hope, year 1907, fixed property	$ 428,939,492

An Ancient Volcanic Eruption in Alaska

Every traveler on the upper Yukon River has noticed a conspicuous white bed, 4 to 6 inches in thickness, that occurs on the river banks. This is made up of volcanic ash derived from a volcano located in the northern margin of the St. Elias Range more than 100 miles to the south. Though geologically speaking the material is of recent age, yet it was probably erupted 1,400 years ago. There are, of course, no historical records of this eruption, but in the course of explorations in Alaska much has been learned about the distribution and thickness of the material ejected. It originally covered an area of over 140,000 square miles, and some of it was carried over 450 miles from the volcano. The deposit varies in thickness from 300 feet near the volcano to an inch or two at the margin of the area covered by it. A rough estimate indicates that over 10 cubic miles of material was ejected at the time of this eruption. During the eruption of Katmai volcano in southwestern Alaska in June, 1912, about 5 cubic miles of ash was ejected, and about the same amount fell from the Krakatoa eruption of 1883. This Yukon eruption is therefore comparable in intensity with some of the larger eruptions of historical time. All the available information about this subject is summarized in a paper entitled "An ancient volcanic eruption in the upper Yukon basin," by Stephen R. Capps, issued by the United States Geological Survey as Professional Paper 95-D.

Total Wealth of States

U. S. Census Estimate for 1912.

	Total	Per Capita
Total U. S.....	$187,739,071,090	$1,965
New England	11,805,422,012	1,744
Maine	1,069,594,027	1,420
New Hampshire...	649,320,469	1,493
Vermont	527,261,775	1,470
Massachusetts ...	6,302,988,392	1,805
Rhode Island.....	970,802,690	1,709
Connecticut	2,285,454,659	1,969
Middle Atlantic.....	46,211,667,778	2,290
New York	25,011,105,223	2,626
New Jersey.....	5,743,032,278	2,140
Pennsylvania	15,457,530,277	1,939
East North Central.	39,502,313,584	2,106
Ohio	8,908,432,943	1,817
Indiana	5,194,682,500	1,894
Illinois	15,484,450,232	2,660
Michigan	5,427,022,651	1,873
Wisconsin	4,487,725,258	1,875
West North Central.	31,208,417,942	2,617
Minnesota	5,547,327,017	2,582
Iowa	7,868,454,211	3,539
Missouri	5,842,017,009	1,752
North Dakota....	2,141,626,961	3,374
South Dakota....	1,398,573,425	2,239
Nebraska	3,794,986,781	3,110
Kansas	4,615,432,538	2,652

	Total	Per Capita
South Atlantic	14,843,963,211	1,179
Delaware	307,948,613	1,493
Maryland	2,177,958,864	1,661
Dist. of Columbia.	1,173,857,112	3,425
Virginia	2,289,913,786	1,086
West Virginia....	2,303,571,209	1,800
North Carolina...	1,807,573,780	794
South Carolina...	1,351,400,753	869
Georgia	2,382,600,866	883
Florida	1,049,138,228	1,307
East South Central.	7,660,040,736	890
Kentucky	2,267,777,525	977
Tennessee	1,920,348,261	864
Alabama	2,127,054,930	964
Mississippi	1,344,860,020	726
West South Central.	15,434,960,541	1,662
Arkansas	1,829,521,736	1,120
Louisiana	2,164,437,746	1,260
Oklahoma	4,581,091,918	2,475
Texas	6,859,909,141	1,679
Mountain	6,753,014,065	2,371
Montana	1,149,732,986	2,834
Idaho	608,305,157	1,680
Wyoming	353,844,827	2,241
Colorado	2,386,923,583	2,785
New Mexico	513,733,026	1,440
Arizona	501,852,186	2,255
Utah	781,613,390	1,979
Nevada	457,008,910	5,038
Pacific	13,626,919,363	2,969
Washington	3,218,360,623	2,511
Oregon	1,944,354,463	2,661
California	8,464,204,277	3,284

By addressing the Director of the Bureau of the Census, Washington, D. C., a Bulletin on the Estimated Valuation of National Wealth may be obtained.

Olives and Olive Oil

While the original home of the olive is claimed to be in India, the Mediterranean region without doubt is the one with which the historical knowledge of the olive is associated. The northern limit of the olive belt touches the forty-fourth parallel, and in a few favored locations extends to the forty-fifth. The southern limit, like the isothermal line, varies from the twenty-fifth to the eighteenth.

Today, as of old, the great producing countries are situated in this region, the average annual production being about 800,000 tons of olive oil. Of the total production in 1912, Spain furnished 240,000 tons; Italy, 235,000 tons; Asiatic Turkey, 180,000 tons; Greece, 55,000 tons; Portugal, 35,000 tons; France, 30,000 tons; Tunis, 25,000 tons; Algeria, 20,000 tons, and Austria, 5,000 tons.

While a large part of the production of these countries is consumed at home, a large amount is also exported. The exports from Algeria and Tunis are mainly to France, and the exports from Greece are mainly to Italy and France, although both of these countries produce oil on a much larger scale than Greece. Italy takes about one-half of the exports from Greece, or about 2,000,000 gallons in good years; France buys about 1,000,000 gallons from the same source, and Russia, 375,000 gallons. The United States is the best customer for Greek olives, a black fruit preserved in brine.

Spain, which is the largest producer of olives, exported olive oil in 1914 valued at $9,000,000 and olives valued at $2,300,000. The second largest producer of olives is Italy. Marseilles is the leading olive oil trade center, followed by Nice. Larger quantities of olive oil pass through Marseilles than any other city.

Oil is better for being pressed immediately after the fruit is taken from the tree; therefore, most of the pressing is done in the region where the olives are grown and not in large factories as is the case with seed oils.

Olives are produced to some extent outside of the Mediterranean region —in the United States and Australia. The State of California produces nearly all the olives raised in the United States. The value of the crop is estimated at $2,000,000. The general working basis in California is about 20 per cent of pickled olives and 80 per cent of olive oil.

The olive was introduced into California at the San Diego Mission from Lower California soon after 1769, and between that date and 1823 was planted in most of, if not all, the twenty-one missions of the coast. The mission variety has been largely supplanted by improved varieties imported from France and Italy. The leading centers of olive production are Pomona, in Los Angeles County and San Diego and Santa Barbara Counties.

The olive industry has been growing rapidly and what it needs mainly is protection against adulteration. Large quantities of cottonseed oil are sent to olive producing regions of Italy and France, and mixed with olive oil and then reshipped to this country as pure oil.

One feature about the cultivation of the olive is its suitability for growing under arid conditions, and therefore it can be made a profitable crop in the warmer parts of arid and semi-arid districts in western Texas, southern Arizona and California.

The development of a taste for olive oil in the United States was at first very slow. In 1876 only 178,000 gallons were imported; in 1896, 942,000 gallons; and in 1904, 1,937,632 gallons.—[*Commercial America.*]

THE GROWTH OF GEOGRAPHICAL ORGANIZATIONS

THE movement for the organizing of teachers of geography is making excellent progress. Minnesota has formed a state association and the twin cities—Minneapolis and St. Paul—under the leadership of Prof. E. J. Posey of the State University, have organized a large and vigorous society. Indiana recently formed a state organization and elected Prof. B. F. Schockel of the Terre Haute Normal School president.

California has organized a society including the teachers in the region around San Francisco Bay with Prof. Earle G. Linsley of Mills College as president.

North Dakota organized recently and elected Prof. Howard E. Simpson of the State University as president.

Illinois has organized under the leadership of Miss Mabel C. Stark of the State Normal University.

At the annual meeting of the Wisconsin Geographical Society at Milwaukee, November 5, it was voted to federate with the national organization now forming. President W. J. Sutherland of the Platteville Normal School was elected president of the State Council. It was voted to divide the state into nine districts each centering around a normal school, and to ask the head of the department of geography in each of these schools to act as a district leader in matters pertaining to geography. The plan contemplates the organized study of local geography, the providing of speakers on geography for the county and district teachers' associations and the preparation of papers for educational periodicals.

AGRICULTURAL ATLASES

THERE are in the course of preparation in the Office of Farm Management in the U. S. Dept. of Agriculture two publications which promise to be of considerable interest to teachers of Economic Geography. They are to be called Atlases of American and of World Agriculture. The former is to be a most important contribution to geography but will not likely appear until 1917. Some advance maps from it are, however, to appear in the Yearbook of the Dep't. of Agriculture for 1915.

The Atlas of World Agriculture is to show by dot maps the distribution of important crops and animal industries in the chief producing countries of the world. There are to be about 100 maps and about 30,000 words of descriptive and explanatory text. The value of the maps to teachers is to be increased by the addition of large numbers of diagrams showing the comparative acreage, production and yields of crops in important countries. Other diagrams are to show numbers of animals and the trade in agricultural products. It is hoped that this atlas may be available early in 1916.